

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Previously Presented) A catheter for percutaneous insertion comprising:
 - a sheath portion with a lumen extending therein,
 - an insertion member disposed slidably in the lumen of said sheath portion and provided with a distal end portion capable of protruding from a distal end portion of said sheath portion,
 - an injection needle disposed in the distal end portion of said insertion member for injecting a therapeutic composition to a target tissue, and
 - paired electrodes disposed in a distal end portion of the catheter for measuring impedance, both of said paired electrodes being disposed at said insertion member apart from the bevel of said injection needle, and at least one of said paired electrodes being constructed so as to move into the target tissue when the target tissue is punctured by said injection needle.
2. (Original) A catheter as claimed in claim 1, wherein said paired electrodes are disposed in the distal end portion of said insertion member.
3. (Previously Presented) A catheter as claimed in claim 2, wherein at least one of said paired electrodes is separated by not less than 1 mm from a

leading end of the bevel of said injection needle relative to a longitudinal direction of said insertion member.

4. (Original) A catheter as claimed in claim 2, wherein said paired electrodes exist in a plurality of sets which are positioned as separated relative to a longitudinal direction of said insertion member.

5. (Previously Presented) A catheter as claimed in claim 4, wherein at least one of the electrodes composed of said plurality of sets of paired electrodes is parted by not less than 1 mm from a leading end of the bevel of said injection needle relative to the longitudinal direction of said insertion member.

6. (Previously Presented) A catheter as claimed in claim 1, wherein one of said paired electrodes is positioned not more than 3 mm from a leading end of the bevel of said injection needle relative to the longitudinal direction of said insertion member.

7. (Currently Amended) A catheter as claimed in claim 6, wherein one of said paired electrodes is positioned not less than 1 mm from the leading end of the bevel of said injection needle relative to the longitudinal direction of said insertion member.

8. (Original) A catheter as claimed in claim 6, wherein said paired electrodes exist in a plurality of sets and electrodes disposed in the distal end portion

of said insertion member are positioned as individually parted relative to a longitudinal direction of said insertion member.

9. (Previously Presented) A catheter as claimed in claim 8, wherein at least one of the electrodes disposed in the distal end portion of said insertion member is separated by not less than 1 mm from a leading end of the bevel of said injection needle relative to the longitudinal direction of said insertion member.

10. (Original) A catheter as claimed in claim 1, wherein the distal end portion of said sheath portion is provided with a through-hole communicating with the lumen of said sheath portion.

11. (Original) A catheter as claimed in claim 10, wherein said through-hole is separated by not less than 1 mm from an end face of the distal end portion of said sheath portion relative to a longitudinal direction of said insertion member.

12. (Original) A catheter as claimed in claim 1, wherein said target tissue is a heart.

13. (Previously Presented) A catheter system comprising:
a catheter for percutaneous insertion including a sheath portion with a lumen extending therein, an insertion member disposed slidably in the lumen of said sheath portion and provided with a distal end portion capable of protruding from a distal end portion of said sheath portion, and an injection needle disposed in the distal end

portion of said insertion member for injecting a therapeutic composition to a target tissue,

paired electrodes disposed in a distal end portion of said catheter for measuring impedance, both of said paired electrodes being disposed at said insertion member apart from the bevel of said injection needle, and

a puncture detecting device to which conductors extending from said paired electrodes are able to be connected for detecting a puncture by said injection needle based on impedance values measured by said paired electrodes.

14. (Original) A catheter system as claimed in claim 13, wherein one of said paired electrodes is positioned more toward a proximal end side of said catheter than the other of said paired electrodes.

15. (Previously Presented) A method for injecting a therapeutic composition with a catheter including a sheath portion with a lumen extending therein, an insertion member disposed slidably in the lumen of said sheath portion and provided with a distal end portion capable of protruding from a distal end portion of said sheath portion, an injection needle disposed in the distal end portion of said insertion member for injecting a therapeutic composition to a target tissue, and paired electrodes disposed in a distal end portion of the catheter for measuring impedance, both of said paired electrodes being disposed at said insertion member apart from the bevel of said injection needle, said method comprising:

inserting said catheter into a living body and advancing it to a neighborhood of the target tissue, and measuring impedance with said paired electrodes, moving said

insertion member in a distal end direction relative to said sheath portion, and protruding said injection needle from the distal end portion of said sheath portion to puncture the target tissue while moving one of said paired electrodes from a neighborhood of the target tissue into the target tissue; and injecting the therapeutic composition through said injection needle into the target tissue after a change is detected in the impedance values as measured by said paired electrodes.

16. (Cancelled)